

REMARKS

This Amendment is fully responsive to the non-final Office Action dated February 6, 2009, issued in connection with the above-identified application. Claims 1-19 were previously pending in the present application. With this Amendment, claims 1, 2, 5-9 and 18 have been amended; and claims 3, 4, 10-17 and 19 have been canceled without prejudice or disclaimer to the subject matter therein. Accordingly, claims 1, 2, 5-9 and 18 are all the claims presently pending in the present application. No new matter has been introduced by the amendments made to the claims. Favorable reconsideration is respectfully requested.

To facilitate the Examiner's reconsideration of the present application, the Applicants have provided amendments to the specification and the abstract. The changes to the specification and the abstract include minor editorial and clarifying changes. No new matter has been introduced by the amendments made to the specification and the abstract.

In the Office Action, the Examiner objects to Figs. 1-5 alleging that the figures fail to include "Prior Art" legends. The Applicants have provided replacement sheets for Figs. 1-5. Each replacement sheet includes a "Prior Art" legend, as suggested by the Examiner. Withdrawal of the objection to the drawings is now respectfully requested.

In the Office Action, the Examiner objects to the title of the invention. Specifically, the Examiner alleges that the title is not descriptive or clearly indicative of the claimed invention. The Examiner also suggests amending the title to read "Image Encoding Method of Restricting Random Access Reference Order." The Applicants have amended the title, as suggested by the Examiner. Withdrawal of the objection to the title is now respectfully requested.

In the Office Action, claims 1-9 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite. Specifically, the Examiner alleges that claim 1 recites the limitation "the first access unit" in line 25, which has insufficient antecedent basis. The Applicants have amended claim 1 to address the rejection to claims 1-9 under 35 U.S.C. 112, second paragraph. Withdrawal of the rejection to claims 1-9 under 35 U.S.C. 112, second paragraph is now respectfully requested.

In the Office Action, claims 1-15 have been rejected under 35 U.S.C. 101 for failing to fall within one of the four enumerated statutory classes of patentable subject matter.

Specifically, the Examiner indicates that the method or process recited in the claims must: (1) be tied to another statutory class (such as a particular apparatus); or (2) transform underlying subject matter (such as an article or material) to a different state or thing.

The Applicants have amended independent claim 1 to point out in more detail the associated structure used to perform the steps recited in the claim. As amended, independent claim 1 is now believed to be directed to statutory subject matter within the meaning of 35 U.S.C. 101 (i.e., now tied to a particular apparatus). Additionally, claims 10-15 have been canceled thereby rendering the above rejection to those claims moot. Withdrawal of the rejection to claims 1-15 under 35 U.S.C. 101 is now respectfully requested.

In Office Action, claim 16 has been rejected under 35 U.S.C. 101 for being directed to non-statutory subject matter. Claim 16 has been canceled thereby rendering the above rejection to that claim moot. Withdrawal of the rejection to claim 16 under 35 U.S.C. 101 is now respectfully requested.

In Office Action, claims 1, 10 and 16-18 have been rejected under 35 U.S.C. 102(a) as being anticipated by the Applicants Admitted Prior Art (hereafter "the AAPA"). The Applicants have canceled claims 10, 16 and 17 thereby rendering the above rejection to those claims moot. Additionally, the Applicants have amended independent claims 1 and 18 to help further distinguish the present invention from the cited prior art. Claim 1, as amended, recites the following features:

"[a] picture coding method of coding a plurality of pictures included in a picture signal for generating a coded picture signal by coding each of predetermined pictures as an entry picture without reference to another picture, and coding each of the pictures other than the entry pictures with reference to another coded picture, the picture signal including an access unit within which a picture located after the entry picture in coding order is able to refer to a picture located before the entry picture in coding order, the access unit being made up of a plurality of pictures including the entry picture, the picture coding method comprising:

- a selection step of selecting, using a selection unit, a target access unit;

- a first reference restriction step of restricting, using a first reference restriction unit, in the case where a first access unit including a first entry picture is selected in the selection step, so

that a post-entry picture located after the first entry picture in display order within the first access unit refers to another picture except for: (1) all pictures located before the first entry picture in coding order; and (2) a forward reference pre-entry picture which is located before the entry picture in display order within the first access unit and refers to a picture located before the first entry picture in coding order;

a second reference restriction step of restricting, using a second reference restriction unit, in the case where the first access unit including the first entry picture is selected in the selection step, within a second access unit including a second entry picture, so that a pre-entry picture located before the second entry picture in display order refers to another picture except for: (1) all the pictures located before the first entry picture in coding order; and (2) the forward reference pre-entry picture, the second access unit immediately following the first access unit; and

a reference structure information coding step of coding, using a reference structure information coding unit, in the case where the first access unit including the first entry picture is selected in the selection step, reference structure information indicating an access unit processed as a target access unit for which the first and second reference restriction steps have been executed.”

The features noted above in independent claim 1 are similarly recited in independent claim 18. Additionally, the features noted above are fully supported by the Applicants’ disclosure.

The present invention (as recited in independent claims 1 and 18) is characterized by including a first reference restriction step (or unit), a second reference restriction step (or unit), and a reference structure information coding step (or unit), in a picture coding method (or apparatus) having a flexible prediction structure in which “a picture located after an entry picture in coding order can refer to a picture located before the entry picture in coding order.”

Coding efficiency can be improved by making it possible to refer to the picture located before the entry picture. However, if all the pictures are allowed to refer to the picture located before the entry picture, it would become difficult to perform random

access starting from the entry picture. This is because picture information referred to by the picture located after the entry picture cannot be obtained when starting the random access from the entry picture, in the case where the picture located after the entry picture in coding order refers to the picture located before the entry picture in coding order.

Consequently, in the present invention (as recited in independent claims 1 and 18), the random access can be performed by selecting a predetermined access unit and executing a reference restriction. In addition, reference structure information indicates from which access unit the random access can be performed. Accordingly, the present invention (as recited in independent claims 1 and 18) provides the advantageous effect of achieving a balance between the improvement in the coding efficiency and random access.

In the Office Action, the Examiner relies on the AAPA for disclosing or suggesting all the features recited in independent claims 1 and 18. However, the Applicants assert that the AAPA fails to disclose or suggest all the features now recited in independent claims 1 and 18 (as amended).

In the conventional example (MPEG-2) of the AAPA, a reference relationship of a B-picture is predetermined, and a B-picture located before an I-picture in coding order is not referred to. However, as a prediction structure is predetermined in this conventional example, the coding efficiency cannot be improved.

The problems that the present invention solves relate to problems that occur only after the prediction structure is made flexible when improving the coding efficiency. As noted above, the present invention (as recited in independent claim 1 and 18) is characterized by including a first reference restriction step (or unit), a second reference restriction step (or unit), and a reference structure information coding step (or unit), in a picture coding method (or apparatus) having a flexible prediction structure in which “a picture located after an entry picture in coding order can refer to a picture located before the entry picture in coding order.” With this structure, it becomes possible to achieve the balance between improving coding efficiency and allowing random access. The conventional example of the AAPA neither discloses nor suggests the aforementioned

structure and advantageous effect. The AAPA is disclosed in Figs. 1-5 of the present application.

It is noted that the reference relationships Rr1 to Rr4 shown in Fig. 2 are prohibited in the present invention (as recited in independent claims 1 and 18). However, the Examiner appears to rely specifically on Fig. 2 for disclosing or suggesting the features of the present invention because, in Fig. 2, a B-picture located after an I-picture (entry picture) of RAU1 (in display order) is prohibited from referring to two B-pictures of RAU0, and a B-picture located before an I-picture (entry picture) of RAU2 (in display order) is prohibited from referring to the two B-pictures of RAU0.

However, in claims 1 and 18 (as amended), for clarification, RAU1 is a first access unit, RAU2 is a second access unit, an entry picture (I-picture) of RAU1 is a first entry picture, and an entry picture (I-picture) of RAU2 is a second entry picture.

Additionally, reference to “all pictures located before the first entry picture in coding order” is prohibited so that the reference relationship Rr1 is always prohibited. Furthermore, reference to “a forward reference pre-entry picture which is located before the first entry picture in display order within the first access unit and refers to a picture located before the first entry picture in coding order” is prohibited so that the reference relationship Rr2 is always prohibited.

Likewise, reference to “all pictures located before the first entry picture in coding order” is prohibited so that the reference relationship Rr3 is always prohibited. Moreover, reference to “a forward reference pre-entry picture” is prohibited so that the reference relationship Rr4 is always prohibited. Therefore, Fig. 2 of the present application does not disclose or suggest the features of the present invention (as recited in independent claims 1 and 18, as amended).

Based on the above discussion, independent claims 1 and 18 (as amended) are not believed to be anticipated or rendered obvious by the AAPA.

In the Office Action, claims 2-9, 11-15 and 19 have been rejected under 35 U.S.C. 103(a) as being unpatentable over the AAPA. Claims 3, 4, 10-15 and 19 have been canceled thereby rendering the above rejection to those claims moot. Additionally,

claims 2 and 5-9 depend from independent claim 1. As noted above, the AAPA fails to disclose or suggest all the features recited in independent claim 1, as amended.

Accordingly, claims 2 and 5-9 are not anticipated or rendered obvious by the AAPA at least by virtue of their dependencies from claim 1.

In light of the above, the Applicants respectfully submit that all the pending claims are patentable over the prior art of record. The Applicants respectfully request that the Examiner withdraw the rejections presented in the outstanding Office Action, and pass the present application to issue. The Examiner is invited to contact the undersigned attorney by telephone to resolve any remaining issues.

Respectfully submitted,

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